CONTRIBUTIONS TO THE FLORA OF WESTERN AUSTRALIA.

No. 1.

PROTEACEAE, RUTACEAE, POLYPORACEAE, PHALLOIDEAE.

By D. A. HERBERT, M.Sc., Economic Botanist, Analytical Department, Perth.

Read 11*th May*, 1920.

PROTEACEAE.

Isopogon occidentalis, sp. nov.

A shrub, the branches slightly silky pubescent. Leaves once or twice divided into rigid terete segments about three-quarter to one line in diameter, obtuse or mucronate, erect or spreading, the whole leaf under three inches long generally two to two and a half inches. Cones terminal ovoid about eight lines broad and one inch long with flowers. Outer bracts few, two to five lines long pubescent outside, glabrous inside. Cone scales two and a half lines long, broadly cuneate, woolly outside, glabrous inside, narrower than in *I. divergens*. Perianth about seven lines long, glabrous except for terminal tufts of hairs on the ends of the segments. Style-end clavate, minutely but densely pubescent, separated from the bulbous base of the brush by a slight construction. Brush pappilose on the bulbous base, otherwise glabrous. Receptacle ovoid cylindrical.

Locality—Cranbrook (Dr. Stoward), East from Solomon's Well ; Stirling Range (Dr. A. Morrison).
Flowering period—September.

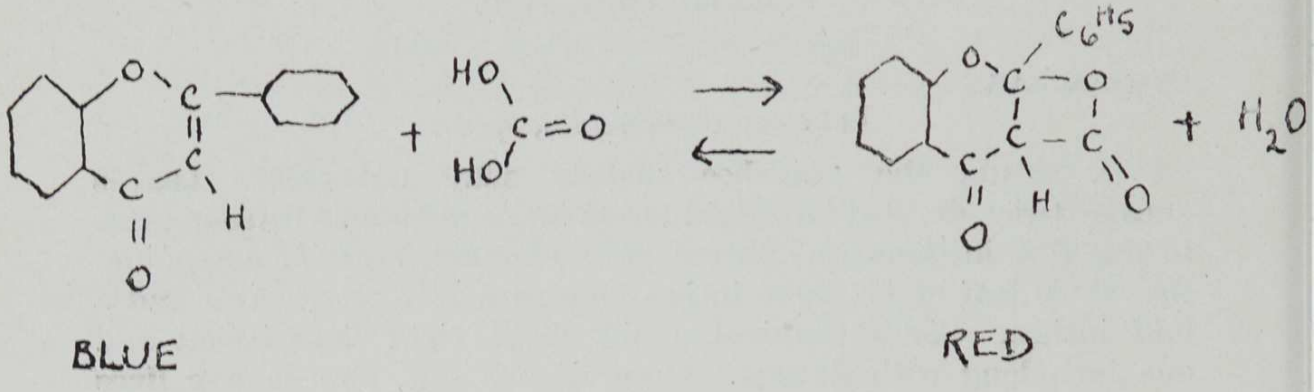
The new species has its nearest affinity in *I. divergens*, R. Br., from which it differs in its minutely silky pubescent branches, the length of the leaves, size of cones, shape of cone-scales, length of perianth, and the brush.

RUTACEAE.

Boronia tenuis, Benth.

Bentham's description of this species requires alteration in one point, namely, the colour of the flowers. This he described as blue. Mr. A. Cayzer collected this species at Guppy's Siding in Spring, 1918, and found that in a field the flowers are pink.

Boronia tenuis is a Swan River species classified by Bentham under the Cyaneae, a series distinguished from the *Variabiles* by the blue or bluish petals instead of red or pink. This classification works well for dried specimens, but this particular example shows that it is useless in the determination of fresh material, as on drying the petals of B. *tenuis* become blue. The pink colour can be restored readily by treatment of the petals with hydrochloric acid, and the blue again produced by treatment with ammonia. The pink colour is also restored when the flowers are kept moist in an atmosphere of carbon dioxide. The conclusion is that the change of colour is due to the loss of carbon dioxide from the living petal on drying and the pigment remaining is blue. It is suggested that an action of the following type takes place :—



Similar changes are produced in flowers of other Boronias and Eriostemons when treated with ammonia and with hydrochloric acid, but with these other species the mere loss of carbon dioxide does not seem to effect their colour, and such changes are only produced artificially by more violent reactions than the natural chemical changes.

FUNGI.

POLYPORACEAE.

Xylostroma gigantea, Fries.

Big Brook, February, 1919.

This fungus has been recorded in Victoria, New South Wales, and Queensland as attacking various Eucalypts. In February, 1919, I found it in the heartwood of fallen Karri logs (*Eucalyptus diversicolor*, at Big Brook. It occurs in thick interwoven sheets resembling chamois leather, and is probably the sterile state of one of the Polyporaceae. Fruiting bodies have not yet been observed.

PHALLOIDEAE.

Lysurus Gardneri, Berkeley, Lysurus australiensis, Cooke and Mass.

South Perth, April, 1919.
Claremont, April, 1920.

This terrestial fungus, previously unrecorded in Western Australia, was described by Cooke and Massee in Grevillea XVIII., 6 (1889), as *Lysurus australiensis* and is now referred to *L. Gardneri*. Berk. Its previously known Australian localities are Queensland and New South Wales. In appearance it somewhat resembles a star fish on a cellular white stalk several inches in height. The lobes are tawny in colour and slimy, but the most noticeable point is the fetid smell, which attracts flies, chiefly blowflies, from far and near. This smell is characteristic of the Phallaceae family and of the allied family Clathraceae, both of which are grouped together as the Phalloideae. Flies feed on the slime and, flying elsewhere, distribute the spores far and wide. In the case of Phallus, an allied genus, it has been shown that the spores germinate better after passage through the alimentary canal of the fly. Perhaps this is also true of Lysurus. On the 24th of April, 1919, several blowflies were confined in bottles with specimens of the fungus and ate the slime greedily. Two deposited eggs in it and these hatched.

One of the flies was removed and washed with distilled water and placed over a gelatine plate in a petri-dish to excrete, the object being to determine if germination of the spores was any more rapid after passage through the alimentary canal. A control culture of spores which had not been so treated was made. There was no germination in a fortnight, and by this time the first gelatine culture was badly infected by bacteria, evidently originally derived from the excreta of the blowfly. By this time the fungus was unobtainable, and further experiment could not be made.

The food value of the fetid slime is very low, and maggots and flies of various species, such as blowflies, house flies, and metallic blue flies (*Rutila decora*), though feeding greedily on it, died in about two days when confined on it. A specimen of the fungus left out on the laboratory table often had up to a dozen flies of various species on it. The smell is restricted to the slime. The vegetative part and the immature fruiting body, before slimy degeneration of the basidia takes place, possess the typical mushroom smell.